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CONTAINERS
used in
SHIPPING
FRUITS
and
VEGETABLES



FIVE TYPES of containers are used in shipping fruits and vegetables—baskets, crates, boxes, barrels, and sacks. The containers used for shipping a given commodity may vary widely in different sections of the country.

The increase in the production of fruits and vegetables, the increase in carload shipments of these commodities, the development of producing sections, the introduction of new types of containers, the penetration into one section of types of containers popular in other sections, and the keen competition between many producing sections have served to stimulate interest on the part of farmers in the containers used throughout the country for the fruits and vegetables they grow and ship. Without recommending one type over another, this bulletin sets forth, under each commodity, what containers are used and those most favored by important shipping sections.

CONTAINERS USED IN SHIPPING FRUITS AND VEGETABLES

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INTRODUCTION

THE CONTAINERS used in shipping fruits and vegetables are of vital importance in the handling of these commodities. More than a million carloads of fruits and vegetables are shipped annually in the United States. The greater part of this produce is packed in containers of some sort. To package this great quantity requires more than one billion containers, representing an investment of several million dollars.

The containers used are of five types—baskets, crates, boxes, barrels, and sacks. The baskets used are of seven types—berry, till, hamper, round stave, straight side or tub, splint or market, and Climax or grape baskets. Crates and boxes have either panel or solid ends, and are made either of rotary cut or of sawn material. The barrels are of three sizes—the standard fruit and vegetable barrel, the standard cranberry barrel, and the 4-bushel barrel. The fruit and vegetable barrels are of three types—stave, open-stave, and veneer. Sacks are generally made of jute, but may be made of cotton or other fibers.

The containers in use for shipping a given commodity may vary widely in different sections of the country. For the same kind of vegetable one section may use a basket, another a crate, a third a barrel, and a fourth a sack. The increase in the production of fruits and vegetables, the increase in carload shipments of these commodi-

ties, the development of producing sections, the introduction of new types of containers, the penetration into one section of types of containers popular in other sections, and the keen competition between many producing sections have served to stimulate interest on the part of farmers in the containers used throughout the country for the fruits and vegetables they grow and ship. It is impossible to mention all of the different containers which may be used in different sections at various times. Some commodities are shipped from individual sections in such small quantities that the use of no particular container has been developed, and whatever is handy is used. Again, fruits and vegetables taken into city markets by near-by farmers may move in a variety of containers. For instance, in one New England city spinach was found on the market in lettuce crates, egg cases, orange boxes, and hampers. In this bulletin an effort has been made to mention the containers most favored by the important shipping sections.

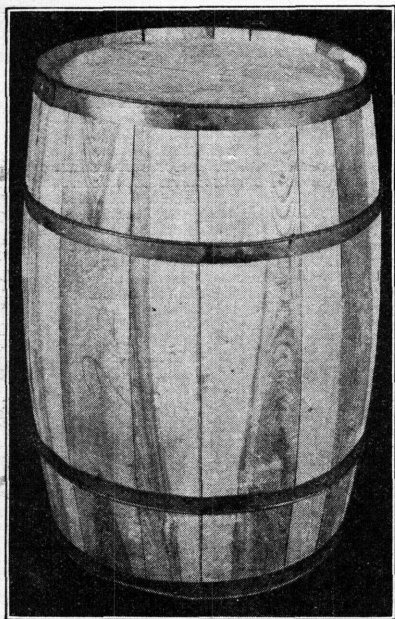


FIGURE 1.—Typical United States standard apple barrel. Wood hoops are used on a majority of these barrels

APPLES

The three containers used for the shipment of apples are the barrel, the box, and the basket. The barrel (fig. 1) has been standardized by Federal law, its cubical content being 7,056 cubic inches. Commercially, one barrel is generally considered equivalent to three boxes or three bushel baskets. Actually, the barrel exceeds the capacity of three boxes by 535.5 cubic inches, or approximately 8 quarts, and that of three bushel baskets by 604.74 cubic inches, or 9 quarts. The barrel has been and still is the popular package in the eastern part of the United

States, but is being replaced to some extent by the basket, especially for the earlier apples.

The northwestern apple box (fig. 2) has been standardized by law in the following States in the West: California, Idaho, Montana, New Mexico, Oregon, Utah, and Washington. As a result it is used almost to the exclusion of other packages except in Idaho and Utah, in which many baskets are used, and in California, which permits the use of other boxes if marked "irregular." In California a special box is used for the packing of some apples.

How complete has been the acceptance of the northwestern apple box by the country as a whole is shown by the fact that it is also recognized by law in the States of Connecticut, Indiana, Kansas, Maine, Massachusetts, and Vermont, and the District of Columbia,

and that in other sections this box is the one instinctively thought of when an apple box is mentioned. This box is also used for the shipment of quinces.

The inside dimensions of the northwestern box are $10\frac{1}{2}$ by $11\frac{1}{2}$ by 18 inches, giving it a cubic content of 2,173.5 cubic inches. This is 23.08 cubic inches in excess of the United States standard bushel of 2,150.42 cubic inches, but as the excess tolerance allowed for a bushel container under the United States standard container act is 50 cubic inches, this box may be considered as a bushel container. A reduction of the depth from $11\frac{1}{2}$ to $11\frac{3}{8}$ inches would bring the capacity to almost exactly 1 bushel, but the packs now in use in the Northwest have been worked out on the basis of the present measurements, and it is not believed that any good purpose would be served by seeking a change. A description of these packs may be found in Farmers' Bulletin No. 1457.¹

Even with a container as well standardized as the apple box, variations in specifications are found. The schedule of specifications for fruit and vegetable crates and boxes, issued by the Department of Agriculture, lists eight separate specifications for domestic apple boxes. Ends are cut eleven-sixteenths, three-fourths, twenty-five-thirty-seconds, thirteen-sixteenths, and seven-eighths inch thick, sides five-sixteenths and three-eighths inch; and tops and bottoms three-sixteenths and one-fourth inch. Sides and tops and bottoms are cut in the following lengths: $19\frac{3}{8}$, $19\frac{1}{2}$, and $19\frac{3}{4}$ inches. These variations in thickness are largely due to the manufacturer's wish to cut as economically as possible the

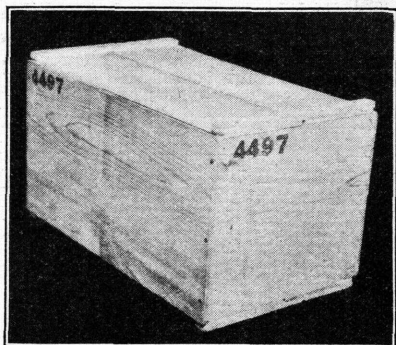


FIGURE 2.—Northwestern standard apple box

stock from which shook is made up; the variations in length represent an attempt to maintain the inside length of the box at 18 inches, and they occur in conjunction with variations in thickness of ends. Tops are sometimes cut longer than sides and bottoms in order to make them easy to nail over the bulge pack. If practicable, it would be desirable to have a uniform length for apple-box shook so that tops and bottoms could also be used for peach, pear, and other boxes.

Although most of the apple boxes used in the East are shipped in from the Pacific coast, the eastern-made panel-end type is sometimes used. To maintain the standard inside length of 18 inches, this type should have an outside length of 20 inches.

The baskets most commonly used for apples are the 1-bushel size of the round stave and straight-side or tub type. (Figs. 3 and 4.) The basket has been growing in popularity during the past few years, and has made appreciable inroads on the use of the barrel.

¹ PAILTHORP, R. R., and KINGSLEY, F. S. PACKING APPLES IN BOXES. U. S. Dept. Agr. Farmers' Bul. 1457, 22 p., illus. 1925.

The growth in popularity of the basket has been intensified by the development of the various types of straight-side or tub baskets, and by the introduction of ring-packing devices. At the present time, from 15 to 20 per cent of the apples shipped are packed in baskets. Some experiments have been made with the use of a straight-side type for export shipments, and there is some indication that it may

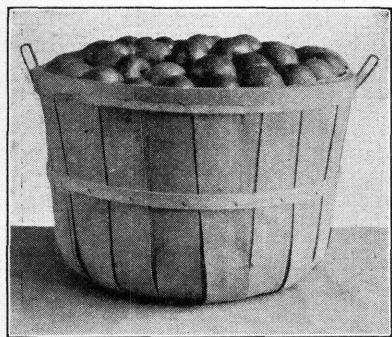


FIGURE 3.—Apples in a 1-bushel round stave basket

be possible to use them for this purpose, if the baskets are properly made and properly strapped.

The use of bushel hampers for apples has been common in Delaware, Maryland, and New Jersey for several years, but there is a tendency for them to be replaced by the basket, particularly the straight-side type. In this section a bushel hamper with loose bottom was formerly used to a great extent. With this type the cover is placed in position, the hamper turned bottom up, and the fruit

ring-packed through the bottom end. The bottom is then forced into place and nailed in. One of the types of straight-side basket is also made with a loose bottom and is packed in the same way.

ARTICHOKES

Artichokes are shipped in boxes of two sizes, the full-size box measuring $9\frac{3}{4}$ by 11 by $20\frac{5}{8}$ inches, and the half size, $4\frac{7}{8}$ by 11 by $20\frac{5}{8}$

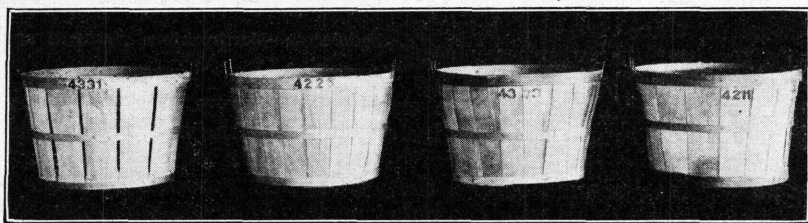


FIGURE 4.—Typical 1-bushel straight-side or tub baskets, used for apples and many other commodities

inches, inside. The full-size box is the old California apple box. (Fig. 5.)

ASPARAGUS

Asparagus of necessity must be marketed in special crates or boxes. (Fig. 6.) A popular type of crate is pyramidal in form. Asparagus is usually shipped in crates holding either 1 or 2 dozen bunches, although it may be shipped loose in either boxes or crates. The pyramidal crate, which is most popular in California, has two compartments

which hold six bunches each. The inside measurements of this crate are usually $10\frac{1}{2}$ by $9\frac{1}{2}$ by 11 by $17\frac{1}{4}$ inches, with outside length of slat of $19\frac{1}{2}$ inches. This same size of crate has been used in Georgia and the Carolinas, where a panel-end crate of similar dimensions is also used. In addition, in California, shorter crates with an outside length of slat of $17\frac{1}{2}$ inches, or even shorter, are sometimes used. The center partition used in the regular crate is often omitted from this short crate.

A 2-dozen-size crate has previously been the popular size in New Jersey, but the present tendency is toward a dozen-size container, especially for extra fancy asparagus.

The 2-dozen-size crate has an inside measurement of $10\frac{1}{2}$ by $14\frac{1}{2}$ by 17 by $23\frac{3}{8}$ and an outside length of slat of 25 inches. This crate does not have any center partition. The bunches are packed four to the width and six to the length of the crate. New Jersey, Maryland, Delaware, and Pennsylvania have so recently begun to use a crate holding 1 dozen bunches that no uniform crate has been adopted. Variations exist primarily because of differences in the manner of packing and in the size of bunches. As the 2-dozen-size crate used in this section does not have a center partition, the use of one does not seem essential in the 1-dozen size.

A specification which seems representative for this crate is $16\frac{1}{8}$ by $10\frac{1}{2}$ by $12\frac{1}{4}$ by $10\frac{1}{2}$ inches, inside, with an outside length of slat

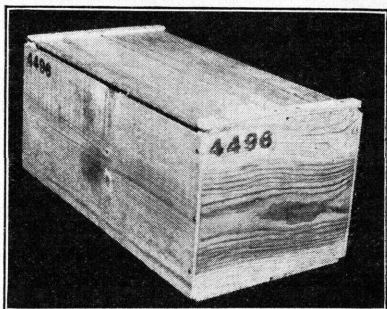


FIGURE 5.—Full-size California artichoke and rhubarb box

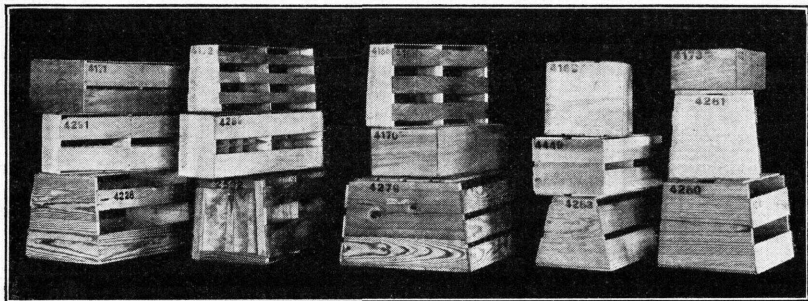


FIGURE 6.—Various types of asparagus crates

of $17\frac{3}{4}$ inches. This specification provides a crate in which can be packed firmly 1 dozen, or half as many, of the same size bunches as are packed in the 2-dozen crate.

This section has also used the 32-quart berry crate and a pyramid crate holding $1\frac{1}{2}$ dozen bunches. The 32-quart berry crate is going out of use, and there seems to be little demand for a pyramid crate holding $1\frac{1}{2}$ dozen bunches.

The section around Kennewick, Wash., formerly marketed its asparagus in a flat crate, with the asparagus packed loose in two

compartments, the tips toward the center partition. Typical dimensions of such a box are $2\frac{1}{4}$ by 14 by 18 inches, inside. Of recent years the tendency in this section is toward the use of pyramid crates. One such crate measures 12 inches long, $7\frac{1}{2}$ inches high, $9\frac{1}{2}$ inches wide at the bottom, and $5\frac{1}{2}$ inches wide at the top, inside. This holds 12 pounds of bulk asparagus.

The Walla Walla (Wash.) section has used pyramid crates for several years. Two different sets of dimensions seem to be commonly used. In one case the ends are $10\frac{1}{2}$ inches wide at the bottom and $8\frac{1}{2}$ inches wide at the top, with a depth of $10\frac{3}{4}$ inches and an inside length of 18 inches. The other crate is $9\frac{3}{4}$ inches wide at the bottom, $5\frac{3}{4}$ inches wide at the top, $8\frac{1}{2}$ inches deep, and 18 inches long, inside. This crate holds 18 pounds of bulk asparagus.

A rectangular-compartment crate holding 24 bunches is in use in Illinois, each compartment containing a bunch, but its use is not extensive. Some growers in Ohio pack asparagus in splint or market baskets.

Sizes of crates might easily be simplified. If asparagus is bunched, the 1 and 2 dozen sizes should be sufficient, the crates from different sections having approximately the same inside measurements, but with the use of a center partition optional. In addition, there seems to be a demand for a crate in which the asparagus is not bunched, although there is now an entire lack of uniformity in the dimensions of such crates.

AVOCADOES

The shipment of avocados has been almost entirely by express. California avocados are shipped in three different sizes of crates known as the lug, the half lug, and the flat. The lug, which measures $7\frac{1}{4}$ by $13\frac{3}{4}$ by $15\frac{7}{8}$ inches, holds about 2 dozen medium to large fruits; the half lug, which measures $4\frac{1}{2}$ by $13\frac{3}{4}$ by $15\frac{7}{8}$ inches, holds a dozen large fruits or 2 dozen small fruits; the flat, which measures $2\frac{3}{4}$ by $11\frac{1}{2}$ by $15\frac{7}{8}$ inches, holds about a dozen medium fruits.

Most of the Florida avocados are shipped in iced crates, although the 6-basket peach-and-tomato crate without baskets or dividers is used to some extent. In this crate the avocados are packed in excelsior or wood wool. Sometimes a center head is placed in this crate, and an extra slat on each side.

The refrigerator crates are of two kinds and both are patented containers. One of them is made with three compartments; the one in the center is a ventilated compartment for ice and the two end compartments are for the avocados. The cover of the center compartment is in the form of a slide and can be opened and closed for reicing during transit without disturbing the fruit in the two outside compartments.

The other crate is similar, but instead of a center ice chamber it has a top tray made of one piece. Cleats are nailed in this crate 4 inches from the top, and a tray or extra top is cut small enough to go down in the crate, resting on the cleat in order to hold the ice. This crate is the regular pepper crate with the additions just described.

BEANS

Practically all green beans are shipped in hampers, although round stave and tub baskets are used to some extent. (Fig. 7.) There is considerable difference of opinion in various sections as to the proper size of hamper to use for this commodity. Florida and Mississippi and some other parts of the South ship almost entirely in the 28-quart hamper, believing any larger size to be too large. Under the standard container act of 1928 the use of this size will be illegal after November 1, 1929. After this date growers probably will use either the 24-quart or the 32-quart size. The North Carolina and Virginia sections use the 40-quart hamper. New Jersey uses the bushel size. Hampers are also coming into use on the Pacific coast as bean containers.

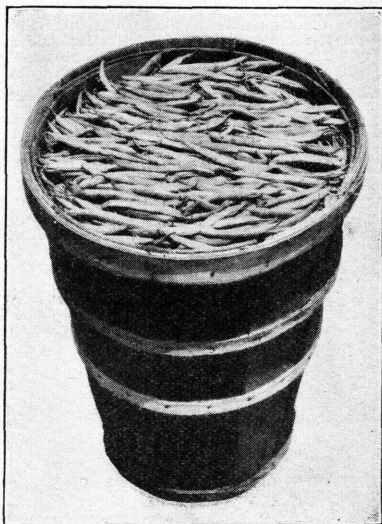


FIGURE 7.—Typical bean hamper

BERRIES

Berries of all kinds are packed in one-half pint, pint, and quart baskets known as boxes or cups; crates are used only as secondary shipping containers for the boxes or cups. Six types of berry boxes are in use—the American, Hallock, Leslie, stitched tray, metal rim, and paper. Special crates have been developed to fit these types. Unfortunately, there is considerable variation in the dimensions of crates for particular types of boxes.

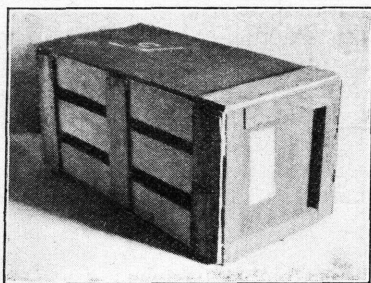


FIGURE 8.—Twenty-four-pint American berry crate

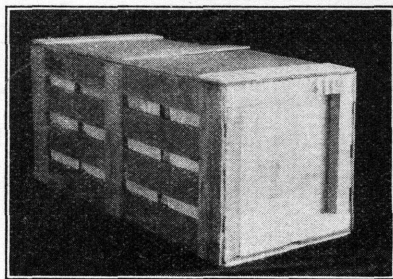


FIGURE 9.—Twenty-four-quart American berry crate

In the eastern section of the country the most popular type of box is the American. The crates generally used hold 24 pints, 24 quarts, and 32 quarts. (Figs. 8, 9, and 10.) Sixty-pint and sixty-quart crates are used to some extent in the Eastern Shore and Norfolk sec-

tions. A crate holding 36 oblong pint cups is being tried out in New Jersey. Typical inside dimensions of the crates in most common use in the East are as follows:

	Inside dimensions	Length of slat
24-pint.....	9 by 9 by 18.....	20
24-quart.....	11 by 11 by 22.....	24
32-quart nailed top.....	14¾ by 11 by 22.....	24
32-quart hinged top.....	14¾ by 11 by 22.....	23½

The American type of box is also used in a special container, known as a pony refrigerator, used in the shipment of early strawberries from southern Florida. (Figs. 11 and 12.) This is a heavy case, usually holding eighty 1-quart boxes. The layers of boxes are separated by dividers of the type used in the ordinary crates. Metal trays are placed in the center or in the top of the box, or both, to hold a supply of ice. Air-tight covers are clamped on after the berries and ice are in place. These pony refrigerators are well adapted to long-distance express shipments when it is not possible to load full cars and when prices are high. An objection occasionally made is that the ice pans sweat and allow water to drop on the berries, causing some injury. These refrigerators are not gift packages and must be returned to the owner after being emptied.

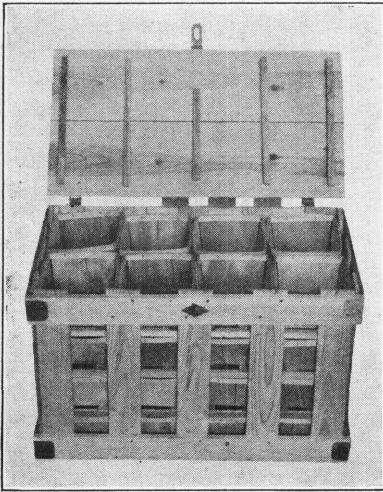


FIGURE 10.—Thirty-two-quart American berry crate with hinged cover

On the Pacific coast only half-pint and pint berry cups are used. These are of three types—metal rim, stitched tray, and Hallock. (Fig. 13.) The first two are used in California and the last is used in Oregon and Washington. The half-pint berry cups are used mainly for shipping raspberries. The 24-pint crate is the most popular size for Hallocks; this crate is made in a number of different styles.

The following are dimensions of typical Pacific coast berry crates:

	Inside dimensions	Length of slat
12-pint Hallock.....	3½ by 13¾ by 18.....	19¾
12-pint San Jose.....	2¾ by 13½ by 18½.....	19½
12-pint Imperial Valley.....	3¾ by 13½ by 17.....	19
15-pint Los Angeles.....	3¾ by 13½ by 22¼.....	23
24-pint shallow Hallock.....	5½ by 16½ by 22¼.....	24½
24-pint deep Hallock.....	6 by 13¾ by 18¾.....	19¾

In the Middle West the Hallock and Leslie boxes are still used in some sections. Crates for Hallock boxes are made in 12 and 24 pint and 12, 16, and 24 quart sizes. The 16-quart is the popular size. A typical dimension for this crate is $7\frac{1}{2}$ by $10\frac{1}{2}$ by $20\frac{1}{4}$ inches. A popular set of dimensions for the 24-pint crate is 6 by $10\frac{1}{2}$ by $20\frac{1}{4}$ inches, inside. Leslie crates are mainly of three sizes—the

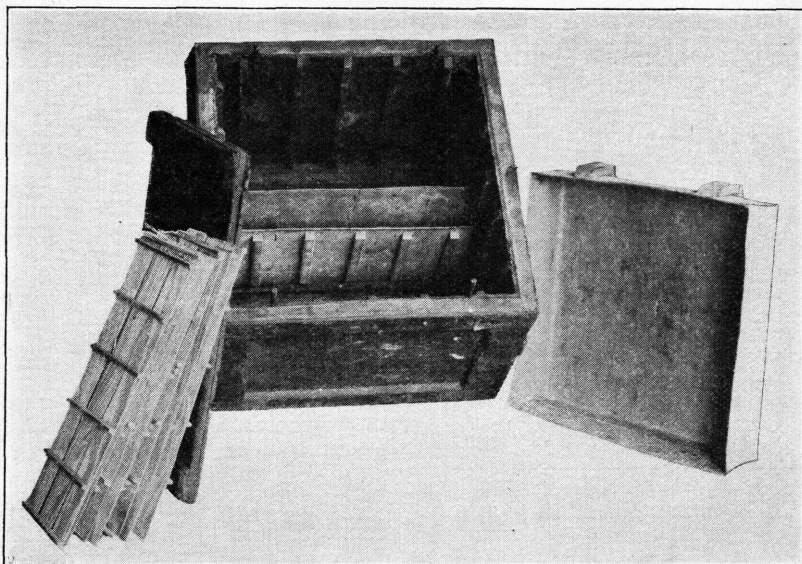


FIGURE 11.—Florida pony refrigerator used for express shipments of berries. Note center ice compartment, top ice pan, dividers, and cover

24-half-pint crate, the 24-pint crate, and the 24-quart crate. Following are typical dimensions for these sizes:

	Inside dimensions	Length of slat
24-half-pint Leslie crate.....	4 by $13\frac{3}{4}$ by $20\frac{1}{4}$	22
24-pint Leslie crate.....	$5\frac{1}{2}$ by $13\frac{3}{4}$ by $20\frac{1}{4}$	22
24-quart Leslie crate.....	$7\frac{3}{4}$ by $15\frac{1}{2}$ by $20\frac{1}{4}$	22

CABBAGE

Cabbage is shipped largely in bulk, although in some of the early-producing and mid-season sections shipments are made extensively in containers. Barrels, hampers, and even sacks are used to some extent as shipping packages, but are being replaced by crates. A large number of different shapes and sizes of crates are used, with little uniformity as to the amount which each contains. The establishment of sectional standards seems necessary because of the numerous sizes desired and the methods of construction peculiar to dif-

ferent sections. It is hoped that five sizes will meet the requirements of all sections. The following are the suggested sizes:

	Inside dimensions	Length of slat
Florida type.....	12 by 18 by 33.....	36
Norfolk type.....	12 by 18 by 33.....	37 $\frac{3}{8}$
Mississippi Valley type.....	16 by 16 by 27 $\frac{1}{2}$	30
Colorado type.....	22 by 18 $\frac{1}{4}$ by 24.....	25 $\frac{3}{4}$
Pacific coast type.....	22 $\frac{1}{4}$ by 24 by 20 $\frac{3}{4}$	24

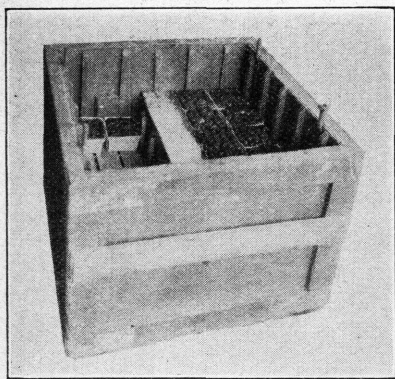


FIGURE 12.—Florida pony refrigerator partially filled

The Florida and Norfolk types have the same cubical content, but the Florida type is a panel-end rotary-cut crate, whereas the Norfolk crate is made of sawn slats. Four types are illustrated in Figures 14 to 17, inclusive.

The Colorado cabbage crate is the same size as the vegetable crate used in that district, but does not contain as many slats. This crate is usually made up with the side slats on the inside of the posts, a different method of construction than that used in other sections. The Mississippi Valley type has been a popular crate for many

years, the size mentioned being one of a number of variations used in different parts of that area.

Standard crates have not been as firmly established for cabbage as for other commodities because in many cases the price received

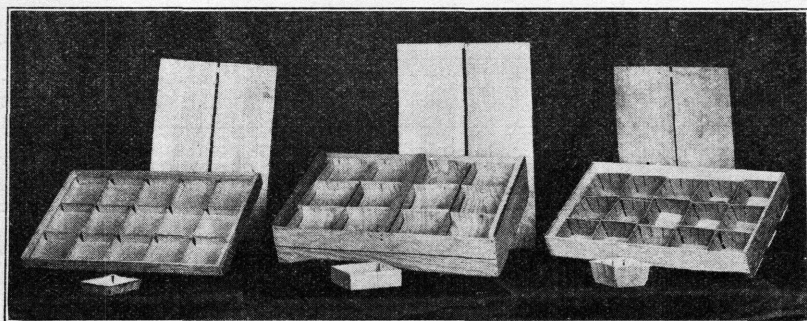


FIGURE 13.—Western berry crates and cups. Left, tray with 15 half-pint metal-rim cups. Center, 24-pint Hallock crate from Puyallup, Wash. Right, tray with fifteen 1-pint metal-rim cups

has not justified careful packs. The result has been that the cabbage which was not shipped in bulk was packed in the most convenient type of container, regardless of its size. Many shippers and receivers have a very hazy idea of the commonly used sizes of cabbage crates. This is partly because so large a share of the crop is shipped in bulk

and partly because shippers often try to pack a certain weight of cabbage in a crate, the 100-pound basis being popular. As the weight of cabbage in crates varies widely according to the looseness or compactness of the heads, this custom has resulted in a great number of sizes.

CANTALOUPE

Approximately three-fourths of the carload shipments of cantaloupes originate in Arizona, California, and Colorado. The crates used in these States are designed to hold certain numbers of cantaloupes, and their use has spread as far east as the Mississippi Valley. The following are the sizes (fig. 18) generally used in the West.

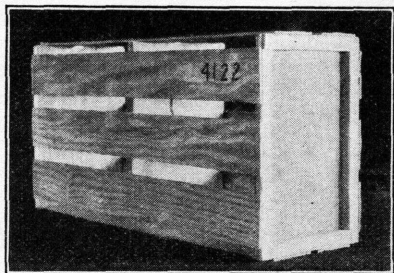


FIGURE 14.—Florida cabbage crate

Type of crate	Dimensions	Usual pack of melons
Standard.....	12 by 12 by 22½	36, 45
Pony.....	11 by 11 by 22½	45, 54
Jumbo.....	13 by 13 by 22½	36, 45
Standard flat.....	4½ by 13½ by 22½	9, 11, 12, 15
Pony flat.....	4 by 12 by 22½	9, 12, 15
Jumbo flat.....	5 by 14½ by 22½	9, 12, 15
Outside length of slat for all sizes, 23½ inches.		

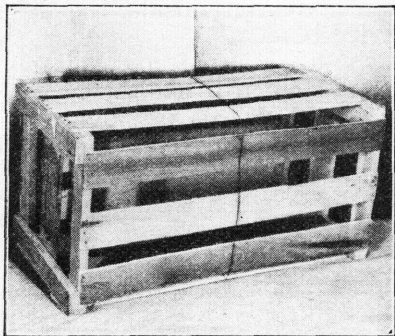


FIGURE 15.—Mississippi Valley cabbage crate

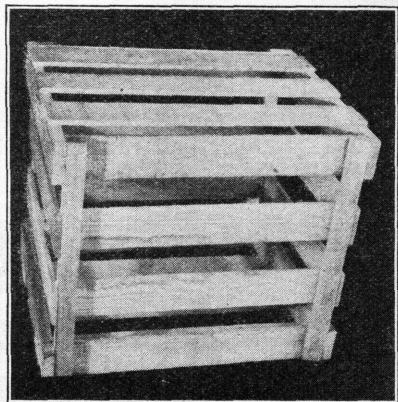


FIGURE 16.—Colorado cabbage crate

The standard, pony, and jumbo sizes are firmly established, but occasional variations are found in flat crates. The flats are used extensively in Colorado, and apparently their use is on the increase. As the melons are only one layer deep in this crate, they are easily inspected, and it is a convenient package for the retailer to handle. The pony crates have their greatest use at the beginning and at the end of the season, when the melons are small.

Although the eastern crates are known by the same names as those used in the West, they are of different construction and vary greatly in dimensions. In the West the slats that form the ends are nailed to triangular posts; in the East the paneled head is used. In the Southeastern section the standard cantaloupe crate (fig. 19) measures 12 by 12 by 22 inches, inside, with an outside length of

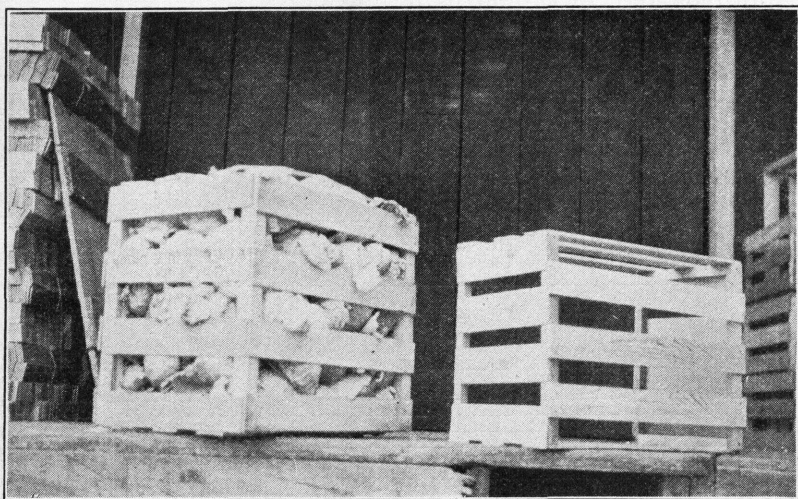


FIGURE 17.—Pacific coast cabbage crates

24 inches. This crate, therefore, is one-half inch longer, over all, than the western crate, and one-half inch shorter, inside, the difference being due to the use of the paneled head.

In Maryland and Delaware, few pony crates are ever used. Crates with 12 by 12 inch heads are known as standard, but the length of slats may vary from 22 to 26 inches. What are known as

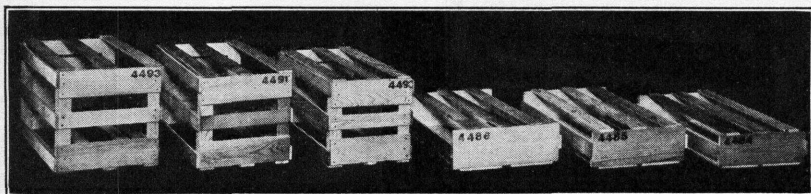


FIGURE 18.—Western cantaloupe crates. From left to right: Jumbo, standard, pony, jumbo flat, standard flat, pony flat

jumbo crates are made with heads 13 by 13, 14 by 14, 15 by 15, and 16 by 16 inches. The flats used in this section have heads measuring 4 by 13, $4\frac{1}{2}$ by 13, and 5 by $13\frac{1}{2}$ inches, the slats for both jumbos and flats varying from $23\frac{1}{2}$ to 26 inches in length. The possible combinations of these various sizes of heads and lengths of slats are so many that in some seasons as many as 50 different sizes of crates have been noted from this section, a number which seems needlessly large.

One of the reasons for this great number of variations is the attempt of Maryland growers to pack always the same number of melons to the crate. As the melons in this section may vary greatly in size, this attempt to maintain a standard pack has brought about a tendency to make the crate fit the pack instead of the pack being varied to fit the crate. The present tendency in this section is toward the use of flats, which should help materially in bringing about a reduction in the number of sizes of crates.

The suggestion has been made that the problem might be solved by using flats varying in depth from $4\frac{1}{2}$ to 6 inches, with slats either 22 or 24 inches long; that the 12 by 12 inch crate be made with a 24-inch slat and packed with 45 melons; that the 13 by 13 inch crate be made with a 22-inch slat and packed with 36 melons. If the melons ran a little small, they could be packed 54 to the standard crate; if they ran too large to pack 36 in the 13 by 13 inch crate, they could be packed in flats.

Much the same variation in crates which exists in Maryland is found in Michigan, except that the latter State uses a great many pony crates. The square-end crates used in Michigan vary in even inches from 9 by 9 to 14 by 14 inches; the flats used have heads measuring $4\frac{1}{2}$ by 14, 5 by 14, and 5 by 15 inches. The slats used on all of these crates vary in length from 18 to 24 inches. Here again the variation in sizes is due to an attempt to make the crate fit the pack. Instances have been known of large growers who are equipped with an electrically driven saw, with which slats were sawn each day to the length it was figured the size of the melons demanded. This great number of variations in crate sizes prevents economy in manufacture and causes uncertainty as to exactly what is meant by such trade terms as "standard 45," or "jumbo 36." A not inconsiderable portion of the cantaloupes grown in Michigan and Indiana, especially the smaller sizes, are shipped in bushel baskets and in 12-quart Climax baskets, which readily accommodate irregular sizes.

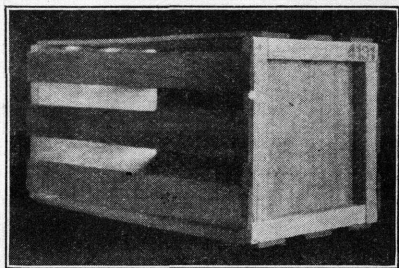


FIGURE 19.—Southeastern standard cantaloupe and green-corn crate

MISCELLANEOUS MELONS

Honeydew melons are packed for the most part in three different crates, know as the pony, standard, and jumbo sizes. The standard and jumbo are the sizes principally used. The inside measurements of these crates are as follows:

Pony, $5\frac{3}{4}$ by $14\frac{1}{2}$ by $22\frac{1}{8}$ inches.

Standard, $6\frac{1}{2}$ by 16 by $22\frac{1}{8}$ inches.

Jumbo, $7\frac{1}{2}$ or $7\frac{3}{4}$ by 16 by $22\frac{1}{8}$ inches.

Outside length of slat for all sizes is $23\frac{1}{2}$ inches.

Crates somewhat deeper, known in some markets as "trunks," are sometimes used. These are $8\frac{3}{4}$ and, occasionally, $9\frac{1}{2}$ inches, in depth.

Winter melons are, in some districts, shipped in jumbo Honeydew crates. Casaba and Persian melons may be packed in one of the sizes of Honeydew or cantaloupe crates or in specially designed crates. Because of the fact that only a comparatively small quantity of these melons are raised, no standard container has yet been developed.

CAULIFLOWER

Cauliflower, because of the nature of the commodity, is generally packed in crates. (Figs. 20 to 23, inclusive.) One of the most commonly used sizes is the California pony crate, which measures $8\frac{1}{2}$ by 18 by $23\frac{1}{4}$ inches, inside, with an outside length of slat of $24\frac{1}{2}$

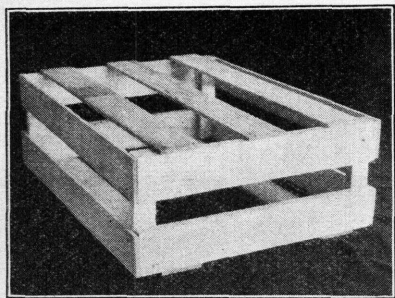


FIGURE 20.—California pony cauliflower crate

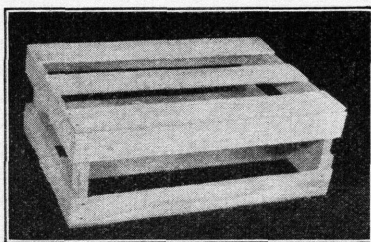


FIGURE 21.—Oregon pony cauliflower crate

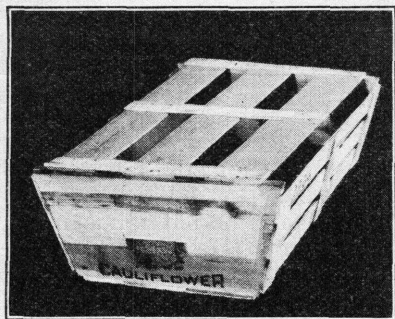


FIGURE 22.—New York cradle cauliflower crate

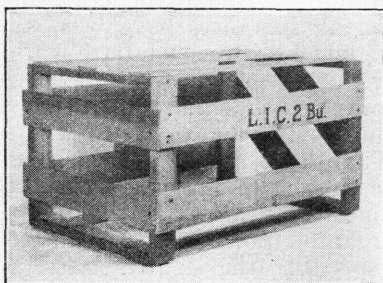


FIGURE 23.—Long Island cauliflower crate

inches. A crate of approximately the same dimensions is in use in Oregon measuring $8\frac{1}{2}$ by 16 by $23\frac{1}{4}$ inches, inside, with an outside length of slat of $24\frac{1}{2}$ inches. Formerly this crate was of the same dimensions as the California pony crate, but its width was reduced to afford better ventilation in transit. At least one shipping organization in Oregon has recently decided to try a still smaller crate, measuring 7 by 16 by $21\frac{3}{4}$ inches, inside, the slats being 23 inches long. California shippers have not found it advantageous to reduce the width of their crate. Colorado uses the same size crate as is used in California. From 12 to 15 is the usual number of heads packed in this pony size.

A crate somewhat larger was formerly used in California and designated as the California standard crate. It measured 13 by 18 by

21 $\frac{5}{8}$ inches, inside measurements, with an outside length of slat of 24 $\frac{1}{2}$ inches. Cauliflower was packed two heads deep in this size, but at present shippers have practically abandoned its use.

One of the most common and satisfactory of the eastern cauliflower containers is the New York cradle crate, which is used principally in the western part of the State. This crate affords plenty of ventilation in transit because of its shape, and is an attractive sale package, as the heads may be seen from either the top or the bottom. Its inside dimensions are: Depth, 8 inches; width, 13 $\frac{1}{2}$ inches at bottom, 18 inches at top; length, 22 $\frac{3}{8}$ inches.

An entirely different crate is used in the Long Island cauliflower section. Although this crate has been in use for many years, there still exists a difference of opinion as to its dimensions. Some manufacturers report the depth and width as 13 by 15 inches, whereas others report 13 $\frac{1}{2}$ by 15 $\frac{1}{2}$ inches, the length of slat being uniform at 23 inches. This crate does not seem to have commended itself to any growers other than those on Long Island. The Catskill Mountain section uses several different types of crates and has not as yet settled on any one as standard.

Michigan uses a crate measuring 8 by 19 $\frac{1}{2}$ by 27 $\frac{1}{8}$ inches, inside, packing in it from 12 to 16 heads, but its use is not extensive.

CELERY

Celery must of necessity be shipped in crates and boxes designed especially for it. It may be packed in the rough, or it may be trimmed, washed, and bunched. The greater portion is shipped from the producing sections in the rough, and is trimmed, washed, and bunched by city distributors. Carload shipments of celery are made from 14 States; the most important shipping sections are found in California, Florida, Michigan, and New York, which shipped 22,862 of the 24,020 carloads that moved in 1927. For practical purposes, therefore, the question of crates for rough celery resolves itself into consideration of the sizes used in these four States.

The California crate (fig. 24), sometimes referred to as the full-size or standard crate, measures 22 by 24 by 20 $\frac{3}{8}$ inches, inside. Variations are sometimes made to allow for differences in the height of the celery, so that the crate may be 20 or 24 inches in height instead of 22 inches. The crate used to the greatest extent in Michigan and New York (fig. 25) is generally called the "two-thirds crate." New York has by law fixed the inside dimensions of this crate as 22 by 16 by 20 $\frac{3}{4}$ inches. The Florida crate (fig. 26) is sometimes called the "one-half crate." It measures 20 by 10 by 22 inches, inside, and is used for the shipment of all Florida celery, no variation being

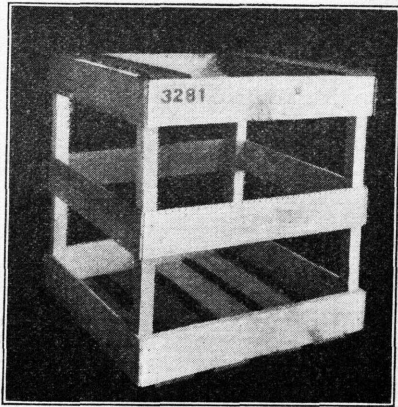


FIGURE 24. — California-Colorado celery crate

made in the height to adjust it to differences in the height of the celery. Florida shippers are the only ones who make a practice of sizing their rough celery, which they pack 3, 4, 6, 8, or 10 dozen stalks to the crate. One exception to the standard Florida crate has been noted at Sanford and also at Sarasota, where a crate measuring 19 by 9 by 22 inches, inside, was used by one shipper. By trimming the celery more closely he was able to pack the same number of stalks in this crate as in the larger. This practice is not generally popular.

A great number of sizes of crates have been and still are used for rough celery in other sections, but it is believed that the tendency is toward the adoption of some one of the three mentioned. An exception is the crate used in Colorado, which is coming into some importance as a celery section. This crate is about halfway between the California and the New York-Michigan crate, measuring 22 by 21 by 19½ inches, inside.



FIGURE 25.—New York standard celery crate; used also in Michigan

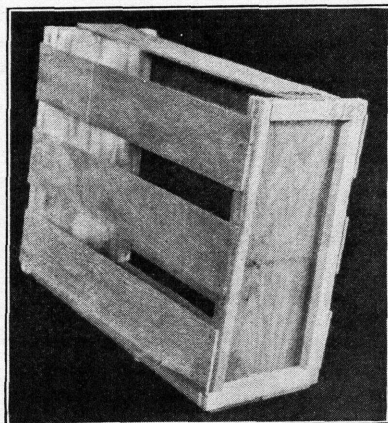


FIGURE 26.—Florida standard celery crate

WASHED CELERY

Michigan is the principal State using special containers for washed celery. Both boxes and crates are used. The crate is known as the "Hi-ball," and is standardized only as to its ends, which measure 12 by 18 inches. The slats vary in length from 8 to 28 inches, by 2-inch steps. Celery packed in these crates is sold by the dozen bunches, and the variations in length are used to fit the crate to the number of dozens it is desired to pack.

The boxes used are called flats and squares. The flats are 14 inches wide, and vary in depth from 5 to 7 inches and in length from 16 to 24 inches. The squares have ends measuring 9 by 9 inches and vary in length from 12 to 20 inches, by 2-inch steps. Celery in these boxes is usually sold by the box.

The diversity of sizes in these crates and boxes is due largely to the demands of wholesale receivers for different quantities and different sizes of celery from time to time throughout the season. Manufacturers are anxious to see standardization brought about, and the growers would be willing to conform to any agreement as to

standard sizes reached by the wholesale receivers. Until such an agreement is reached, or until the growers and manufacturers decide on certain standard sizes and stick to them, the present condition probably will continue. It is believed that one size of box measuring 5 by 14 by 21 inches, inside, is all that is necessary for celery that is packed loose. For bunched celery three different sizes of hi-ball crates probably would be necessary, measuring 12 by 18 by 10, 12, or 22 inches, inside, with an outside length of slat of 12, 14 or 24 inches.

Special crates for washed celery are not used to any extent in the other principal shipping sections. New York uses the California standard crate, the two-third, or New York, crate, and the one-half, or Florida, crate. Florida ships its washed celery in the same crate that is used for rough stock. Colorado uses no crates for its washed celery, but ships it tied in bunches in carloads of mixed vegetables.

CHERRIES

The use of boxes for the shipment of cherries is largely confined to the Pacific coast and Rocky Mountain States, which in 1927 shipped more than 80 per cent of the carload shipments of this fruit. Much confusion has existed as to the sizes of cherry boxes, and as many as 15 different specifications have been reported.

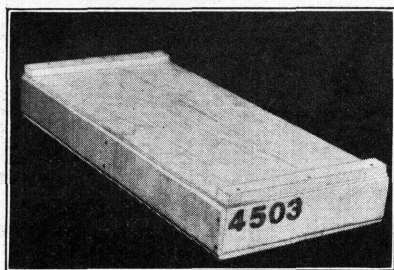


FIGURE 27.—California eastern cherry box

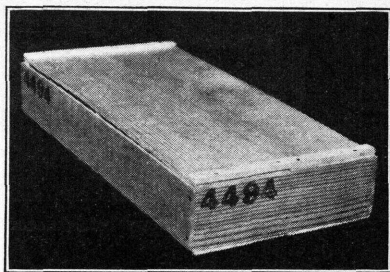


FIGURE 28.—California Lambert cherry box

Attempts to pack a certain number of pounds to a box have undoubtedly been responsible for variations in specifications. For instance, Utah shippers one year contracted to sell cherries on the basis of 15 pounds to a 3-inch box, but found that this box held 16 pounds when packed loose or 17 pounds when packed tight. As a result they decided the next year to use a $2\frac{3}{4}$ -inch box. In 1927 they shipped most of their cherries in boxes measuring $2\frac{7}{8}$ by $11\frac{1}{2}$ by $18\frac{1}{4}$ inches, inside, and marked, "14 lbs. net." One shipper, however, used a box measuring $3\frac{7}{8}$ by $10\frac{3}{4}$ by 15 inches, inside.

Some simplification seems to be developing out of the annoying confusion. California, which formerly recognized five different standard cherry boxes, has reduced the number to two, the eastern box (fig. 27), measuring $2\frac{1}{4}$ by 9 by 18 inches, inside, and the Lambert box (fig. 28) measuring 3 by $9\frac{3}{4}$ by 18 inches, inside. The State of Washington officially recognizes two boxes, one, the eastern box, which they call the 10-pound box, and the other which has inside dimensions of $4\frac{1}{2}$ by 9 by 18 inches, which they call the 20-pound box. Idaho recognizes the two boxes established by Washington,

but provides also for a 15-pound box, measuring 3 by 11½ by 18½ inches, inside. It will thus be seen that the 2¼ by 9 by 18 inch box is common to all three of these States, and it is possible that agreement on standards for one or two additional sizes may eventually be brought about. Oregon, which in 1927 shipped more carloads of cherries than Washington, has not adopted any standards for cherry boxes.

Some California shipping organizations use a pony refrigerator for sending cherries to Atlantic seaboard and southern markets. This box (fig. 29) holds 12 boxes, which measure 2¾ by 9 by 18 inches, inside. It is so constructed that the ice compartment, having a capacity of 50 pounds, can be removed for reicing without opening the chambers containing the cherries. Good results are said to have been obtained in shipping cherries by this method.

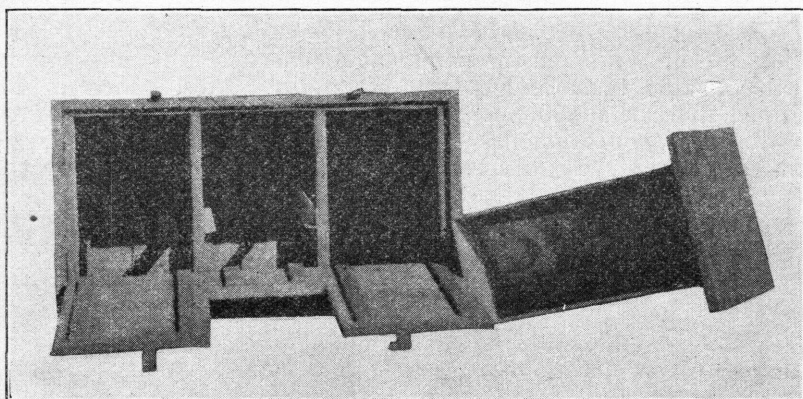


FIGURE 29.—Pony refrigerator used in California for cherries and figs

In eastern States, notably Michigan and Wisconsin, cherries are packed in the 16-quart American or 16-quart Hallock berry crate. In New York, New Jersey, Maryland, and Pennsylvania the 32-quart American berry crate is used. In these States some cherries are marketed in the 4 and 12 quart Climax baskets.

CITRUS FRUIT

Two orange boxes are in common use—the California box, which holds 1.47 bushels, and the Florida box, which contains 1.6 bushels. (Figs. 30 and 31.) The Florida box has been standardized by law in Florida and Texas for several years, and California in 1927 made the accepted dimensions of its orange box a matter of law. The essential difference in the two boxes is in the size of the heads; the California heads measure 11½ by 11½ inches, and the Florida heads measure 12 by 12 inches. Whatever the original cause of this slight difference, it should be borne in mind that Florida uses the panel head, whereas California uses a solid head, which, if made of one piece, can hardly be cut wider than 11½ inches from the standard 12-inch board. From time to time there has been discussion of the desirability of adopting one standard orange box, but the difference

in the method of construction and the fact that the packs now in use have been worked out on the basis of the present measurements would probably defeat any attempt to bring about uniformity. Furthermore, citrus fruit is packed and sold by numerical count and not by measure. A description of these packs may be found in Farmers' Bulletin No. 696.²

A half-size of the Florida orange box, called a strap, and used for tangerines, has been standardized by law in Texas, and by agreement in Florida. The full-size box is used for grapefruit. California has also standardized a half-size of its orange box and has

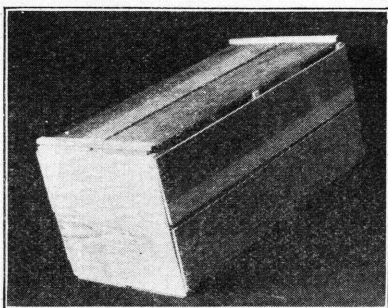


FIGURE 30.—California orange box

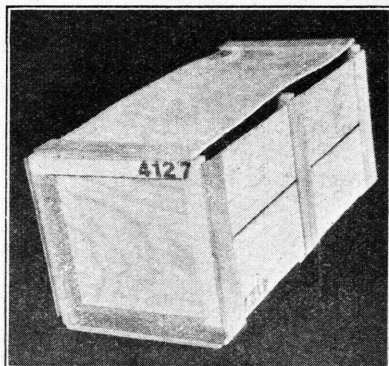


FIGURE 31.—Florida orange and grapefruit box

also adopted standard and jumbo lemon boxes and half sizes of each. Following are the dimension specifications for the various citrus boxes:

Type	Inside dimensions	Outside length of slat	Capacity, in cubic inches
Florida orange box.....	12 by 12 by 24.....	27	3,456
Florida one-half orange box.....	6 by 12 by 24.....	27	1,728
California orange box.....	11½ by 11½ by 24.....	26	3,174
California one-half orange box.....	5¾ by 11½ by 24.....	26	1,587
California standard lemon box.....	10 by 13 by 25.....	27	3,250
California one-half standard lemon box.....	5 by 13 by 25.....	27	1,625
California jumbo lemon box.....	11½ by 13½ by 25.....	27	3,754.68
California one-half jumbo lemon box.....	5¾ by 13½ by 25.....	27	1,877.34

CRANBERRIES

Cranberry containers are at the present time based almost altogether on the standard cranberry barrel established by act of Congress in 1915. This law fixes such dimensions as to produce a barrel with a cubic content of 5,826 cubic inches. This barrel is designed, not to hold a certain amount by dry measure, but to hold 100 pounds of cranberries. The law makes provision for subdivisions known as the third, half, and three-quarters barrel. There has not been any great use of the smaller barrels, but boxes of the one-fourth, one-third, and one-half barrel sizes have come into extensive use.

² RAMSEY, H. J. HANDLING AND SHIPPING CITRUS FRUITS IN THE GULF STATES. U. S. Dept. Agr. Farmers' Bul. 696, 28 p., illus. 1915.

The standard cranberry barrel has been adopted by law in the District of Columbia, Illinois, Massachusetts, Michigan, New Jersey, Oregon, Virginia, and Wisconsin. Five States (Massachusetts, New Jersey, Oregon, Washington, and Wisconsin) have provided by law for standard cranberry boxes. The box adopted by Massachusetts and New Jersey has inside measurements of $7\frac{1}{2}$ by 12 by 22 inches, with a cubic content of 1,980 inches. As a one-third cranberry barrel contains 1,942 cubic inches, this box is approximately a one-third cranberry-barrel box. In addition, New Jersey seems to permit the use of a 1-bushel box.

Oregon provides for the use of cranberry boxes of the capacity of one-half or one-third cranberry barrel. Washington specifies that the cranberry box shall have the capacity of 1,942 cubic inches, or one-third cranberry barrel. Wisconsin specifies a one-bushel box as standard for cranberries.

The boxes generally used for cranberries in the East have not been adopted as a legal container by any State but have come into use as a matter of agreement on the part of organizations that handle and

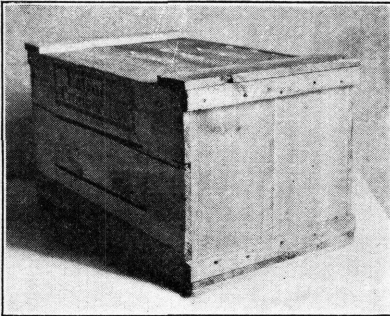


FIGURE 32.—One-half cranberry-barrel box

ship this commodity. These are the one-half and one-fourth cranberry-barrel boxes, the former having been in use for several years. (Fig. 32.) Its inside measurements are $10\frac{1}{2}$ by 14 by 20 inches, giving it a cubic content of 2,913.75 cubic inches, or only three-quarters of a cubic inch more than the one-half cranberry barrel. The one-fourth cranberry-barrel box, a recent introduction, designed to secure more general distribution at the beginning of the season, seems destined to become popular. Its

inside dimensions are $9\frac{1}{4}$ by $10\frac{1}{2}$ by 15 inches, giving it a capacity of 1,456.875 cubic inches, or but three-eighths of a cubic inch greater than the one-fourth cranberry barrel.

In spite of State laws on the subject, the specifications for cranberry boxes reported from the Pacific coast do not provide for boxes which conform exactly to the capacity standards set up. The one-third cranberry-barrel box, which seems to be used to some extent by both Washington and Oregon, measures $7\frac{1}{2}$ by 12 by $21\frac{3}{4}$ inches, inside. This gives it a cubic content of 1,957.5 cubic inches, or 15.5 cubic inches in excess of the one-third cranberry barrel, a difference which is not material. The one-half cranberry-barrel box used in Washington measures $11\frac{1}{4}$ by 12 by $21\frac{3}{4}$ inches inside, giving it a cubic content of 2,936.25 cubic inches, which is an excess over the half cranberry barrel of 23.25 cubic inches. Oregon uses a one-half cranberry-barrel box measuring $11\frac{1}{2}$ by 13 by 20 inches inside, giving it a cubic content of 2,990 cubic inches, or 77 cubic inches in excess of the half cranberry barrel. This excess is more than 1 dry quart, and probably represents at least an additional pound of cranberries.

It would seem that the adoption by the Oregon growers of the box used in Washington would produce a desirable uniformity in the

Pacific coast cranberry section and would cut down the excess which apparently is now given by the Oregon growers.

It is possible that some confusion may exist regarding the quantity of cranberries packed in a box, because of differences in methods of packing. Eastern growers pack the box full, and then force the bottom in place. In this way they put approximately 50 pounds of cranberries in the one-half cranberry-barrel box. Growers who do not use this method of packing do not get as great a weight of cranberries in the package. At times comments are made that the eastern box holds a greater quantity of cranberries, although the cubic content is not as great as some of the western boxes. The differences in methods of packing undoubtedly are responsible for such comments.

GREEN CORN

Green corn is shipped in pepper and celery crates from Florida, the former being the more desirable container for this commodity. The standard cantaloupe crate is used in North Carolina and some other parts of the South. (Fig. 19.) The bushel basket and the barrel are used in some sections; the basket is popular in Texas. From the Pacific coast three sizes of corn crates have been reported—a 5-dozen crate measuring $7\frac{1}{2}$ by 16 by 25 inches inside; a 6-dozen crate measuring 13 by 11 by 14 inches inside; and a 12-dozen crate measuring 13 by 11 by 29 inches inside.

CUCUMBERS

Florida is by far the largest shipper of cucumbers. They are packed in 28-quart and bushel hampers, and in the 12 by 12 by 15 inch bushel crate. Use of the 28-quart size will be illegal after November 1, 1929. The bushel hamper is popular in the Carolinas. Louisiana uses a special box measuring $7\frac{3}{4}$ by $10\frac{3}{4}$ by $21\frac{3}{8}$ inches, inside. The tendency in other sections is to use the package most popular for other commodities. From Virginia north, bushel hampers and baskets are used to a great extent; 12-quart Climax baskets are used in Illinois and Indiana, and lug boxes in California.

FIGS

California fresh figs are shipped in shallow boxes in which fillers are placed which provide a cell for each fig. The number of cells used depends on the size of the figs to be packed. These boxes vary in size, two common sizes measuring 2 by 11 by $15\frac{3}{8}$ inches, and 2 by $11\frac{1}{2}$ by $18\frac{3}{8}$ inches, inside. They hold approximately $5\frac{1}{2}$ and 7 pounds of figs, respectively. Figs have also been shipped from California in the pony refrigerator described in the discussion of cherry containers. Because of the ripeness of the fruit, figs do not carry as well in the "reefer" as do the cherries. Texas figs, when shipped fresh, are packed in the 4-basket tomato crate. As a rule such shipments are made only to points which can be reached in from 10 to 16 hours by express.

GRAPES

Different types of containers are used for the shipment of the American type of grapes, grown principally in the eastern part of

the country, and the European type, grown mainly in California. For the American type of grape the principal type of container is the Climax basket, of which there are three sizes—the 2, 4, and 12 quart. (Fig. 33.) These sizes, with their capacities and measurements, were established by law by the enactment of the United States standard container act. Wire handles have been largely used for the 2 and 4 quart sizes for many years. Practicable wire handles for the 12-quart size have been introduced within recent years and have been gaining in popularity.

Experiments have been made in the shipment of eastern and southern fancy table grapes in 2, 3, or 4 quart till baskets inclosed in carrier crates. These have included such combinations as the use of twelve 2-quart tills in the 6-basket carrier, nine 3-quart tills in a modification of the 32-quart berry crate, four 3-quart square tills in a flat crate, three 4-quart tills in one-half of a 6-basket crate, as well as the standard 6-basket crate containing six 4-quart till baskets. No one

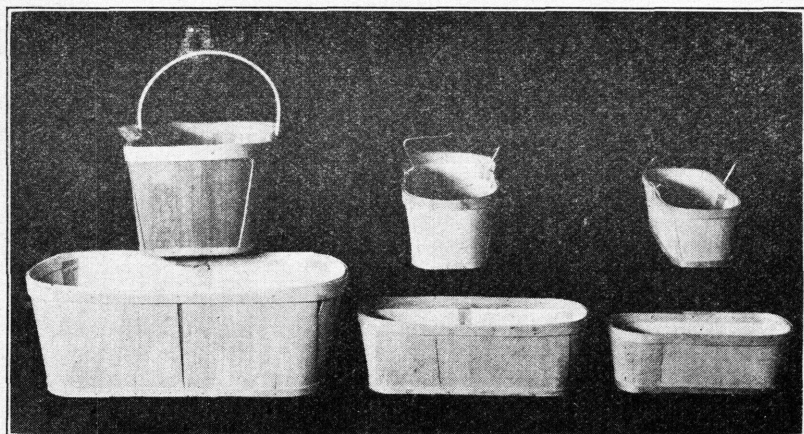


FIGURE 33.—Climax baskets, 12, 4, and 2 quarts

of these containers has as yet come into sufficient use to be looked on as a common shipping package.

The bulk of the European grape crop of California is shipped not in baskets but in boxes, commonly referred to in California as lug boxes. In addition, some grapes are shipped in small baskets inclosed in crates, and some in kegs and drums. The kegs and drums are used for grapes packed in sawdust, cork, or similar material, and some lug boxes are used for this type of pack. Formerly the most popular lug box for shipping grapes was known as the Los Angeles lug, and this container was used without a cover. With the great growth in California shipments, the loading of boxes without covers has decreased, and the tendency now is toward the use of covers on all grape lugs.

Since the shipping of European grapes is confined almost entirely to California, it would seem that a somewhat restricted and definite standardization of containers would have been accomplished. California has for many years attempted to bring about the standardiza-

tion of grape containers, but the demands of shippers' organizations for variations in sizes finally resulted in a decidedly chaotic condition.

In 1927 the State legislature attempted to bring some order out of this condition by adopting new standards. The standards for lug boxes in the 1927 law provide for four lug boxes, $4\frac{1}{4}$, $4\frac{3}{4}$, $5\frac{1}{4}$, and $5\frac{3}{4}$ inches deep. These boxes have an inside width of $13\frac{1}{2}$ inches and an outside length of $17\frac{1}{2}$ inches. (Fig. 34.) The law does not specify the inside length, but as ordinarily made this would be 16 inches. Two sizes of lugs for the sawdust pack are provided for. These are $7\frac{1}{2}$ and $7\frac{3}{4}$ inches deep and have the same width and length as the other lugs. In addition, there is the standard crate, which is 4, $4\frac{1}{4}$, $4\frac{1}{2}$, or $4\frac{3}{4}$ inches deep and 16 inches wide inside, with an outside length of $17\frac{1}{2}$ inches. (Fig. 48.) This crate is designed to hold four 3-quart or two 6-quart metal-rim till baskets. The law also provides for a standard grape drum and a standard grape keg, which are used for grapes packed in sawdust.

It will thus be seen that California provides 13 different standard containers for grapes. This large number of containers is complicated by the fact that the $4\frac{1}{4}$, $4\frac{3}{4}$, $5\frac{1}{4}$, and $5\frac{3}{4}$ -inch lug may be used with or without an $\frac{1}{16}$ -inch cleat on each end to increase the depth. Where the cleat is used, it is obvious that the boxes may be packed level with the cleat, and that when they have reached the receiving market the cleat may be removed and the box appear full even though considerable settling may have occurred.

The situation is further complicated by a provision that other-sized containers may be used if conspicuously marked "irregular container." The law recognizes that too many grape containers exist by providing that the $4\frac{1}{4}$ and $5\frac{1}{4}$ inch lugs and the $7\frac{1}{2}$ -inch sawdust-pack lug shall be considered as standard containers only until July 1, 1929, thus contemplating a reduction from 13 to 10 containers.



FIGURE 34.—A typical California grape lug or box

LETTUCE

Lettuce is marketed in a great many different styles and sizes of crates, boxes, and baskets, but 95 per cent of the carload shipments in 1927 originated in Arizona, California, Colorado, Idaho, New York, and Washington, which use only crates. It is obvious that the crate is the most important of the packages used.

California has standardized its lettuce crate, providing that it shall be 13 inches deep and 18 inches wide, inside, with an outside length of $24\frac{1}{2}$ inches and a minimum inside length of $21\frac{3}{4}$ inches. This unusual provision is to provide for two types of construction. (Fig. 35.) The Los Angeles type is made with the end slats on the inside of the end posts; the Brawley has the slats on the outside of the posts. Both of these types have certain advan-

tages, and there seems to be no desire in California to adopt one to the exclusion of the other. These crates are used for packing from 36 to 90 heads of lettuce, depending on the size of the heads, and the law requires that the crate shall be conspicuously stamped with the exact number of heads contained.

What was known as the Salt Lake crate was formerly used in California to some extent. It has been out of use for a number of years, but a new size similar to the Salt Lake has recently been introduced. This crate is practically one-half the size of the larger crate and, like it, is made in two styles. The head of this crate measures $9\frac{1}{2}$ by 13 inches, with an outside length of $24\frac{1}{2}$ inches.

Arizona uses the California crate, as does Colorado, although minor variations in length are sometimes found in crates from the latter State. Idaho uses a similar crate, with the following inside measurements: Width, 13 inches; height, 17 inches; length, $22\frac{1}{2}$ inches. The California crate is also used in Washington, but instances are found

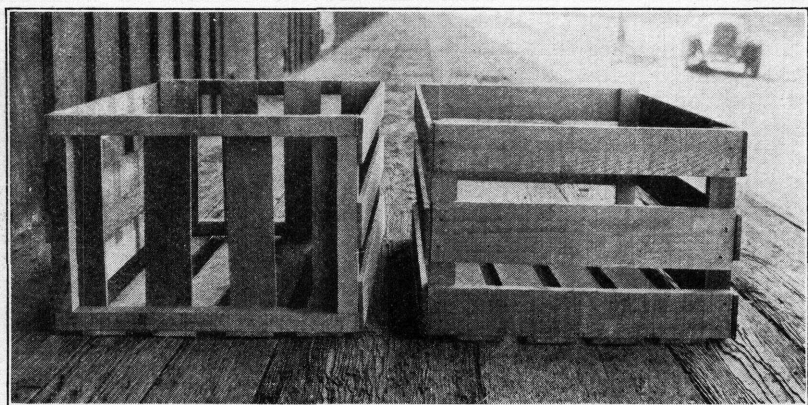


FIGURE 35.—California lettuce crates

where there are crates with heads measuring 14 by 17 inches instead of 13 by 18 inches.

New York formerly used three sizes of crates, each designed to hold 24 heads of lettuce, but after considerable discussion, the growers decided to discard all of them and adopt a new crate measuring $7\frac{1}{2}$ by 16 by 19 inches, inside. (Fig. 36.) This crate has been made by law the standard crate of New York, and it is believed that it will come into general use in the Atlantic Coast States. The manufacturers in Georgia and Florida, who make the bulk of the New York crates, have attempted to introduce this crate in Florida in place of the one which has been used there to some extent. Complete acceptance of this crate by Florida growers has been delayed because of the difficulty of having it incorporated in the tariffs of the railroads that serve this district.

The bulk of the head lettuce is marketed in crates, but Florida moves much of its crop in the 48-quart hamper, and North Carolina uses the 40-quart hamper. Instances have been known of the use of round stave baskets, splint baskets, and barrels.

Leaf lettuce is marketed in a variety of containers, some gardeners using lug boxes and secondhand vegetable, sugar, and flour barrels. The hothouse-lettuce growers of northern Ohio use a square-cornered splint basket, holding 10 pounds of leaf lettuce. Fourteen-quart splint baskets, holding 3 pounds of leaf lettuce, are also used by some growers. Under the standard container act of 1928, these sizes can not be used after November 1, 1929. Some leaf lettuce is marketed in $\frac{3}{4}$ -bushel and 1-bushel round stave baskets, holding approximately 10 and 15 pounds, respectively.

MUSHROOMS

The principal shipping container for mushrooms is the 4-quart Climax basket, holding approximately 3 pounds. A 4-quart square-cornered splint basket is used by growers around Cleveland, Ohio. Mushroom growers have been dissatisfied with the 4-quart containers and have sought a satisfactory container, holding but 1 pound, the idea being to put this commodity on the market in a package which could be sold intact to the consumer. A basket holding a pound would have a capacity of $1\frac{1}{3}$ quarts, and since the making of such a size is forbidden by the United States standard container act, paper cartons holding 1 and 2 pounds have been introduced.

OKRA

As only a limited quantity of okra is raised, most of the shipments are made by express, and the package most convenient at the time is the one generally used. The greater number of these shipments originate in the southeastern section of the country, where the common packages for okra are the hamper and the 6-basket crate. The quantity of okra shipped from Louisiana and Texas is so small that no container can be designated as a favorite, but the bushel round stave basket is used in Texas to some extent.

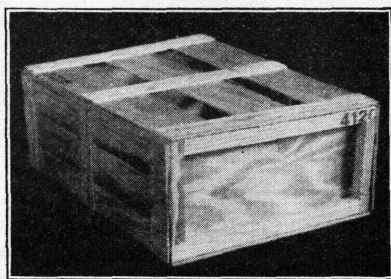


FIGURE 36.—New York standard lettuce crate

ONIONS

The 100-pound sack and the Texas 1-bushel onion crate are the two most popular containers for onions. The 100-pound onion sack generally measures 22 by 40 inches; 50-pound and 60-pound sacks are also made, measuring $18\frac{1}{2}$ by 29 and 19 by 29 inches, respectively. The 1-bushel folding onion crate has been established by law in Texas for many years, and has come to be recognized throughout the United States as the standard onion crate. (Fig. 37.) Its inside dimensions are $9\frac{1}{4}$ by $11\frac{3}{16}$ by $19\frac{5}{8}$ inches. One or the other of these two containers, the 100-pound sack or the 1-bushel crate, is used in practically every onion-growing section of the country, but other bushel crates are used for onions, and the 50-pound sack appears to be growing in favor. In certain instances

this commodity has been shipped in hampers and round stave baskets.

Many Egyptian and Spanish onions are shipped into the United States. The former are packed in jute bags which hold about 112 pounds. Spanish onions are packed in cases, half cases, and crates, containing 125 to 130, 65, and 37 to 40 pounds, respectively. A common type of crate for Spanish onions measures $6\frac{3}{8}$ by 18 by 18 inches, outside and holds 50 onions—20 in one compartment and 30 in the other. Another crate measures $10\frac{1}{2}$ by $14\frac{3}{4}$ by 39 inches, outside, and holds 150 onions.

PEACHES

The western peach box has the same width and length as the pear and apple boxes ($11\frac{1}{2}$ by 18 inches), but there is a considerable variation in depth. Manufacturers' specifications list depths varying from 2 to 6 inches in half and quarter inch intervals. (Fig. 38.). Cherries and plums are sometimes packed in the 2-inch and 4-inch boxes, re-

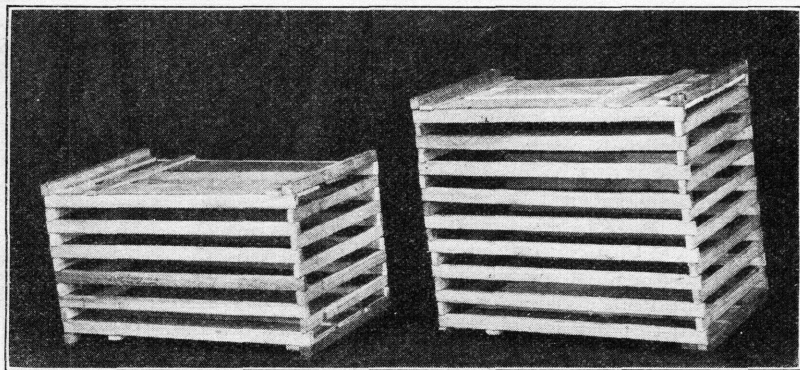


FIGURE 37.—Standard onion crates. Left, 1 bushel; right, $1\frac{1}{2}$ bushels

spectively. The most popular height is $4\frac{1}{2}$ inches and the 4, $4\frac{1}{4}$, and $4\frac{3}{4}$ inch heights are used to a large extent. In Colorado the 4 and $4\frac{1}{2}$ inch are the sizes in the greatest demand. In California the $4\frac{1}{4}$, $4\frac{1}{2}$, and $4\frac{3}{4}$ inch sizes are popular, the $4\frac{1}{4}$ -inch size for packing the early small-sized peaches and the $4\frac{1}{2}$ and $4\frac{3}{4}$ inch sizes for the mid-season and late varieties. A 5-inch box which contains three layers of peaches is sometimes, but not often, used in Colorado. This size is also used for pears in this section instead of the half pear box.

To have numerous peach boxes, varying from 2 to 6 inches in height, hardly seems essential. In a number of sections there is a tendency to make some of these boxes 11 inches instead of $11\frac{1}{2}$. As $11\frac{1}{2}$ inches has been established by custom and seems to serve the shippers' needs, this additional variation only complicates the situation on the market. The slats are in some sections cut both $19\frac{1}{2}$ and $19\frac{3}{4}$ inches. Since the tops and bottoms of the peach boxes are interchangeable with the pear and apple boxes, these slats should all be cut the same length. This matter has been discussed in more detail under apple boxes.

In that part of the country east of the Rocky Mountains the containers used for shipping peaches are the 6-basket crate, the 1-bushel round stave basket, the 1-bushel straight-side or tub basket, and various sizes of hampers. The 6-basket crate was formerly the most generally used, but has given way, to a great extent, to the round stave and tub baskets, but approximately 50 per cent of the Georgia crop moves in the 6-basket crate, and it is used to a considerable extent in North Carolina, West Virginia, and Maryland, and to some extent in New Jersey.

The 6-basket crate (Fig. 39) contains six 4-quart till baskets, placed in two tiers, with a dividing tray to prevent the fruit in the lower tier from being bruised by the pressure of the upper baskets. The commonly accepted inside dimensions of this crate are 10 by 11 by 22 inches, but a 10½-inch depth is used in Maryland. It is a frequent practice to use a half-inch cleat under the cover of the 10-inch crate, in order to take care of the high bulge with which it is commonly packed. Packing schemes have been developed for the 6-basket crate, so that it may be packed with a definite number of peaches, depending on their size.

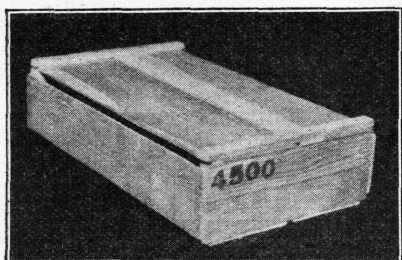


FIGURE 38.—Typical western peach box

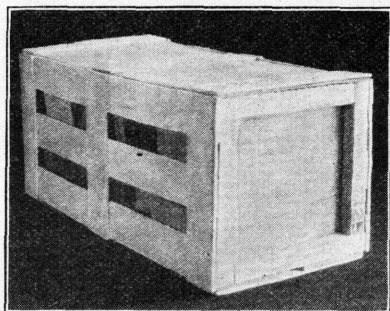


FIGURE 39.—Six-basket peach and tomato crate

The 1-bushel round stave basket came into use in Georgia as a container for peaches as a result of the high price of packing house labor. The baskets were jumble packed and ring faced. When the straight-side or tub basket with a removable bottom came on the market a few years ago it was soon tried in Georgia because it afforded an opportunity of packing through the bottom, thus making the ring face the first operation. Subsequent development of the various ring-packing devices has enabled shippers to accomplish the same result without the use of removable bottoms. Consequently, although the loose-bottom basket is still used, all types of tub baskets are now used in the Southeast. (Figs. 3 and 4.) The ½-bushel size of basket is being tried but has not been used enough for definite conclusions to be drawn.

The round stave and tub baskets are also used in Maryland, Delaware, and New Jersey, but this section continues to use many hampers. In New Jersey the 20-quart hamper is popular. It is used without a cover for trucking into Philadelphia, and other near-by markets. The 14 and 16 quart sizes of hampers are in more or less general use, but the 14-quart hamper is frequently objected to because it can easily be confused with the 16-quart size. In New

York, the round stave and tub baskets are used, and the 10-quart hamper or "high hat," which was formerly popular, is still used at times. Under recently enacted legislation, the use of the 10 and 14 quart hampers will be illegal after November 1, 1929. Michigan uses the round stave and straight-side baskets, and some fancy fruit is packed in the 4-basket flat, which holds four 3-quart square till baskets. The western box has not come into any great use in the East, although it has been used to some extent in southeastern sections, particularly in North Carolina.

PEARS

The pear box has the same inside width and length as the peach and apple boxes, but it is $8\frac{1}{2}$ inches deep. These dimensions are generally accepted in all producing sections, although the State of Washington has designated the 8-inch box as standard. A half pear box is also used, which has an inside measurement of $4\frac{1}{2}$ by $11\frac{1}{2}$ by 18 inches, the same size as the $4\frac{1}{2}$ -inch peach box. A 5-inch peach box is sometimes used for the shipping of pears. The width and length of the pear box should correspond with those of the peach and apple boxes, so that tops and bottoms would be interchangeable.

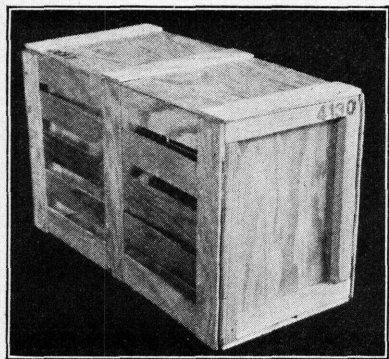


FIGURE 40.—Florida pepper and eggplant crate

No one container can be mentioned as the distinctive one for pears in the eastern section of the country. The tendency is to use the container which, because it is used for other fruit, happens to be most easily obtainable in any particular section. New York, which ships more pears than any other eastern State, uses the round stave basket

in the bushel and one-half bushel sizes, the tub basket, and the barrel.

PEAS

In the eastern sections peas are shipped in 28-quart and bushel hampers and in bushel baskets. The 28-quart hamper will be eliminated by law after November 1, 1929. In the West drums were formerly used to a great extent, but the crate is now popular, and it, in some sections, is being replaced by the hamper. No definite agreement has been reached as to dimensions of western pea crates. The California crates generally have 10 by 18 inch heads, with an outside length of $24\frac{1}{2}$ inches. The Colorado crate is of the same length, but the heads are $10\frac{1}{2}$ or $10\frac{3}{4}$ by 18 inches.

PEPPERS

Only one container is used in the United States which was developed primarily for the shipment of peppers. This is the Florida pepper crate, used in that State for the shipment of peppers and eggplant. (Fig. 40.) As it is also used for the shipment of beets

carrots, turnips, and squash, it may be considered a general utility crate.

This crate was developed from the 32-quart berry crate, and originally had the same dimensions, but was made with an extra slat on each side. As first made it had a capacity of $13\frac{3}{5}$ bushels. Both the berry crate and the pepper crate have changed somewhat in measurement, and the pepper crate is now 14 by 11 by 22 inches inside, and its capacity is a little more than $1\frac{3}{16}$ bushels. Because of its use as a general utility crate, it is unfortunate that this crate is not made to hold $11\frac{1}{2}$ bushels, a result which could be accomplished by making it $13\frac{3}{8}$ by 11 by 22 inches. The use of the present size has become so firmly established that it is doubtful if a change will be made. This crate has been seen in use in Texas and California.

New Jersey, North Carolina, and Virginia use 1-bushel and $1\frac{1}{2}$ -bushel hampers for peppers. Mexico uses the Los Angeles lettuce crate with two extra slats, while Cuba uses the Florida crate.

PINEAPPLES

The chief container for pineapples is the standard southeastern crate, measuring $10\frac{1}{2}$ by 12 by 33 inches inside. (Fig. 41.) This

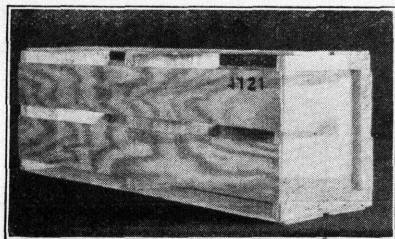


FIGURE 41.—Southeastern standard pineapple crate

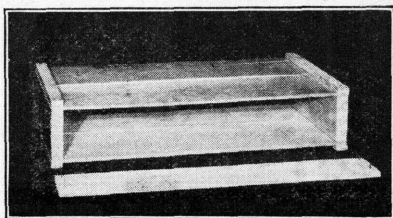


FIGURE 42.—Western prune suitcase

is used for shipments from Florida, Cuba, and the Isle of Pines. It is commonly made with panel ends, but some manufacturers use solid heads, although they adhere to the dimensions given.

PLUMS, PRUNES, AND APRICOTS

Plums, prunes, and apricots are handled in about the same way. The favorite western package for prunes is a box known as the "suit case." (Fig. 42.) Formerly this box measured $3\frac{1}{2}$ by $11\frac{1}{2}$ by 18 inches inside. In recent years the size of this box has been cut down, and the legal dimensions in Washington and Idaho at the present time are $3\frac{1}{4}$ by $11\frac{1}{2}$ by 18 inches inside, but boxes $3\frac{1}{2}$ inches deep are still supplied by some manufacturers. These suitcases are generally packed from the side, and the accepted net weight of prunes in the box is 16 pounds.

There has been some tendency to experiment with variations of this box. Perhaps the most important variant is used in the Milton section of Oregon. The manufacturer's specifications for this box call for a depth of $3\frac{1}{8}$ inches, a width of 11 inches, and a length of 18 inches inside. This is one-eighth of an inch shallower and one-half inch narrower than the ordinary suitcase, but it should be noted

that some of these boxes as manufactured have an actual depth of $3\frac{1}{4}$ inches. In 1926 and 1927 many of the shippers in the Milton section abandoned the practice of packing suitcases from the side, substituting therefor the same method of packing as is used for other boxes.

Another container which is used for prunes and plums throughout the Pacific coast section is the 4-basket crate, holding four 3-quart metal-rim baskets. (Fig. 43.) This crate measures 16 by $16\frac{1}{8}$ inches, inside, and is generally $4\frac{1}{4}$ inches deep, although it may be $4\frac{1}{2}$ or $4\frac{3}{4}$ inches. The $\frac{1}{2}$ -bushel round stave basket is used in this section to some extent. Apricots are packed in both the suitcase and the 4-basket crate, which hold approximately 15 and 20 pounds, respectively, of this fruit.

Eastern plums are shipped in various packages, but 1 bushel round stave baskets, and 4-quart and 12-quart Climax baskets, are probably the most popular. Some plums are occasionally shipped in berry crates.

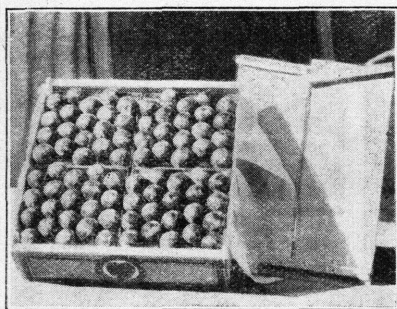


FIGURE 43.—Western 4-basket crate, used for plums, prunes, apricots, grapes, and other commodities

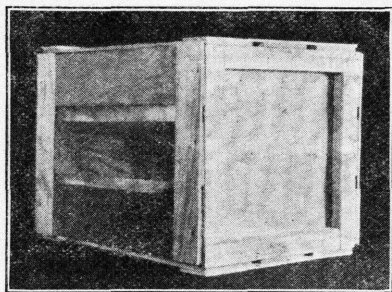


FIGURE 44.—Southeastern standard bushel crate

POTATOES

Potatoes are shipped in barrels, sacks, and crates, and in bulk. The southeastern Atlantic seaboard uses a barrel of one type or another almost to the exclusion of other containers; at least 90 per cent of the potatoes from the Eastern Shore of Maryland, south, are shipped in barrels. In Florida, the double-headed barrel (fig. 45) is used; farther north barrels with burlap tops are favored.

The bushel crate (fig. 44) measuring 12 by 12 by 15 inches, inside, is used to some extent in Florida for early potatoes. There is probably a little use of bushel hampers for potatoes in the Florida section, but this package is not generally regarded as suitable.

In the rest of the country the sack is the popular type of container. It would be almost impossible to list all of the sizes of sacks which are used. The 120, 150, and 165 pound sacks are the most common sizes. There is, however, a tendency to experiment with smaller sizes, such as those holding 100, 50, and 25 pounds. In addition, sacks holding 90, 110, 112, and 116 pounds have been noted.

Some shippers' organizations have packed potatoes in 15 and 30 pound corrugated cartons. Some city distributors have repacked potatoes in 15-pound corrugated cartons and in apple boxes, sizing the potatoes and packing by count.

SWEET POTATOES

Sweet potatoes are shipped in hampers, baskets, crates, barrels, sacks, and in bulk. Formerly, the most commonly used crate was one measuring 12 by 12 by 18 inches, inside. This crate has been superseded to a great extent because it holds more than a bushel, and less than 5 pecks. It is still used in Texas by some shippers as a 50-pound crate. Some shippers weigh out every crate as it is repacked after curing and storing; others weigh a certain number of crates to determine what constitutes a full pack, allowing a pound or more to take care of shrinkage in transit.

In the Southeastern States, like Georgia and the Carolinas, this crate has been replaced by the bushel (fig. 44) and 5-peck crates. The heads of these crates measure 12 by 12 inches, the inside length of the bushel crate being 15 inches, and of the 5-pack crate, $18\frac{3}{4}$ inches. Some shippers prefer a bushel crate having a smaller head and greater length. For this reason special folding sweet-potato crates have been introduced in Arkansas and Tennessee. These have the following inside dimensions: $10\frac{1}{4}$ by $10\frac{1}{4}$ by $20\frac{1}{2}$; $10\frac{5}{8}$ by 11 by $18\frac{1}{2}$; and $9\frac{1}{8}$ by $11\frac{3}{16}$ by $19\frac{5}{8}$ inches.

Hampers (fig. 7) are used to some extent in all of the Southern States but are probably more popular in those in the lower Mississippi Valley. This section favors the 28-quart hamper for most commodities, but it uses the 1-bushel hamper for sweet potatoes. The circular hamper is the type commonly used, but an oval shape has been developed for sweet potatoes and has given satisfaction.

Within recent years the 1-bushel round stave basket (fig. 3) has come into use for shipping sweet potatoes, especially in Texas, where it has replaced the crate to a great extent. It is probable that the straight-side or tub basket will prove as well adapted to this commodity as it has to many others. Both of these baskets as well as the hamper have some vogue with the New Jersey and Delaware sweet-potato shippers.

Barrels are the most popular containers in the northeastern sweet-potato section. Three styles are used—stave, open-stave, and basket barrels. (Figs. 45 to 47.) In some districts basket and open-stave barrels with burlap covers are used in shipping green stock direct from the field. Double-headed stave barrels are often used during the winter months. These barrels are, or should be, the United States standard barrel, of 7,056 cubic inches.



FIGURE 45.—Stave barrel used for potatoes and sweet potatoes

In the southern section little use has been made of barrels except in a few districts that ship green stock early in the season. Stave and open-stave barrels with burlap covers are the ones used. Some shippers chop holes in the staves to permit ventilation.

RHUBARB

Rhubarb is not shipped in sufficient quantities to induce much work in the development of a distinctive container. It is probable that most growers use whatever packages happen to be convenient at the time, but a few special rhubarb containers have been reported.

Illinois uses a crate with square ends running from 19 to 19½ inches long, inside. There is also some variation in the size of the heads, which run from 10¾ by 10¾ to 11½ by 11½ inches. A recent specification gives 10¾ by 10¾ by 19¼ as inside dimensions.

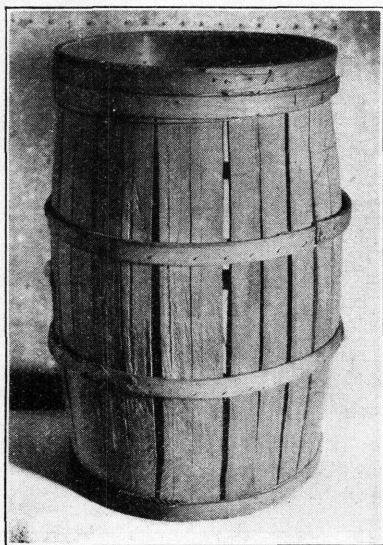


FIGURE 46.—Open-stave barrel

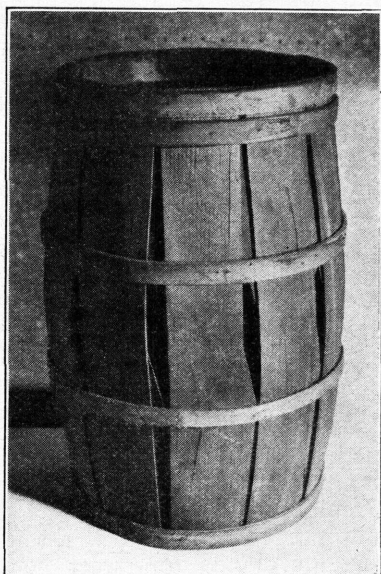


FIGURE 47.—Basket barrel

Colorado uses a box measuring 7¼ by 11½ by 21⅞ inches, and on the Los Angeles market boxes have been found measuring 7¾ by 11½ by 24 inches, inside. No such specifications have been found in any manufacturer's tariff, and it is probable that these boxes are made on special order. The old California apple box, 9¾ by 11 by 20⅝ inches, inside, is also used for rhubarb. The section around Walla Walla, Wash., uses two sizes of boxes, one for field run and the other for fancy stock. The former measures 7½ by 16 by 18 inches, inside, and the latter 6½ by 12 by 18¼ inches.

TOMATOES

The containers most largely used for the shipment of tomatoes are the 6-basket crate, the 4-basket flat, the California box, the New Jersey 20-quart crate, and the Climax basket. In the first two the to-

atoes are packed in till baskets; in the others they are packed without subcontainers. Over 50 per cent of the carload shipments are made in the 6-basket and 4-basket crate.

The 6-basket crate (fig. 48) is the same as the one used for the shipment of peaches from Georgia; but the six 4-quart till baskets which it holds are, in some sections, of somewhat different dimensions. This crate is used for shipping tomatoes from Florida, and for a part of the shipments from Tennessee, Texas, and Mississippi. Its use is confined largely to sections where the tomatoes are brought to packing houses, as the necessary uniform sizing of the fruit and the system of arrangement in the tills require that the operation be performed by experienced workers under close supervision.

The 4-basket flat (fig. 48) contains four 3-quart till baskets. This crate is $4\frac{1}{2}$ inches deep, $13\frac{1}{2}$ inches wide at top, $11\frac{1}{2}$ inches wide at the bottom, inside, and has an outside length of 22 inches. A center head is used, giving two compartments each $10\frac{5}{8}$ inches long, in-

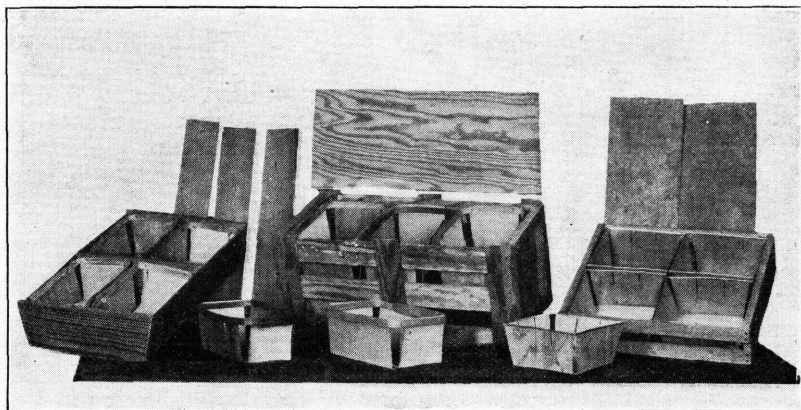


FIGURE 48.—Crates used for tomatoes, peaches, and other small fruits. Left, 4-basket crate from the lower Mississippi Valley. Center, 6-basket crate for tomatoes and peaches. Right, Western 4-basket crate used for tomatoes in some sections, and for grapes and other commodities

side. This crate is popular in the Mississippi, Texas, and Illinois sections, and to a somewhat less extent in Tennessee and Missouri, and is frequently used for packing on the farm.

The California box, known as the Los Angeles lug (fig. 49) is used for shipment from California to northern and eastern markets and for imports of Mexican tomatoes. It measures $5\frac{3}{4}$ by $13\frac{1}{2}$ by $16\frac{1}{4}$ inches, with an outside length of $17\frac{1}{2}$ inches. This box has recently been introduced in Texas, and probably will grow in popularity there if favorably received on the market. Some sections of California ship tomatoes in a crate (fig. 48) holding four square metal-rim till baskets, containing 3 quarts, or approximately 5 pounds each. This crate measures 16 by 16 inches, inside width and length, and is generally $4\frac{1}{4}$ inches deep.

The New Jersey 20-quart crate (fig. 50) is used extensively in the Swedesboro and southern New Jersey sections. There are some variations in the dimensions of this crate, but representative measurements are $6\frac{3}{4}$ by 11 by $18\frac{3}{8}$ inches, inside. The raised central

portion of the top is a peculiar feature, which would prevent stacking were it not for the bottom rails. This container is sometimes referred to as a 30-pound crate, since it holds approximately that weight of tomatoes. Some dissatisfaction with this crate has been expressed by New Jersey shippers, and experiments have been made with other crates.

The 12-quart Climax basket (fig. 33) is favored in shipping sections of Ohio, Indiana, and Kansas, and is used to some extent in Missouri, Illinois, and New Jersey. With the raised type of cover this basket holds about 20 pounds, and with the flat cover about 17 pounds, of tomatoes. The 4-quart and 12-quart Climax baskets have had some use in western New York and in Michigan.

Among other containers which are used for tomatoes are the 20-quart brace hamper and the 10-quart market basket. The former is used in Maryland and New Jersey for trucking tomatoes to canneries, and in New Jersey for trucking to the Philadelphia market. The 10-quart market basket is a common package for hothouse tomatoes in the northern Ohio section, and is used to some extent for boat and rail shipments. As the use of this size will not be permitted

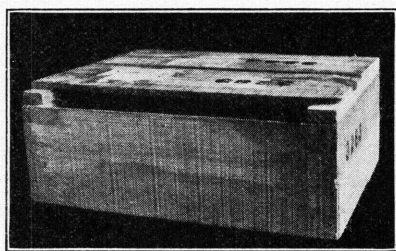


FIGURE 49.—Los Angeles lug used for shipping tomatoes

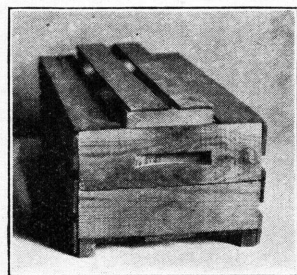


FIGURE 50.—New Jersey 20-quart tomato crate

after November 1, 1929, the use of the 8-quart size is suggested. The 16-quart market basket is used in many sections for local deliveries of tomatoes.

MISCELLANEOUS FOLIAGE-TYPE VEGETABLES

Endive and escarole are shipped from Florida in 1½-bushel hampers. In Louisiana they are packed in 4-bushel barrels with 50 to 60 pounds of ice in two layers. Texas uses the 1-bushel round stave basket, with some ice.

Parsley is shipped from Louisiana in 28-quart hampers, holding about 3 dozen bunches, and in the 4-bushel barrel, with two or three layers of ice. This barrel holds about 20 dozen bunches. Texas uses the 1-bushel round stave basket for this commodity.

Spinach is shipped from Texas in the 1-bushel round stave basket, with 8 to 10 pounds of ice in the center. The Norfolk (Va.) section has always shipped in veneer barrels, but has lately shown a tendency to use the bushel basket so popular in Texas. Louisiana uses the 4-bushel barrel, packing some spinach loose and some bunched. This barrel holds from 10 to 12 dozen bunches, and two or three layers of ice are used to the barrel.

Kale is shipped from the Norfolk section in the veneer barrel.
Brussels sprouts are generally shipped in 32-quart berry crates.

MISCELLANEOUS ROOT-TYPE VEGETABLES

The containers used for beets, carrots, radishes, shallots, and turnips vary with the sections from which the shipments are made, and are usually such containers as are in common use for other commodities. These commodities are generally bunched for shipment.

Beets are shipped from Florida in either the pepper or the celery crate. In Louisiana beets, carrots, radishes, shallots, and turnips are packed in the 4-bushel barrel, with 50 to 60 pounds of cracked ice. Western crates and bushel round stave baskets are also used. The California lettuce paper-lined crate is coming into favor for carrots, and some shipments have been made in $\frac{7}{8}$ -bushel and 1-bushel folding crates. In Texas these commodities are packed in the 1-bushel basket. A modification of the lettuce crate, having wider slats, is used in California; in Colorado root-type vegetables are loaded in bulk between layers of ice. For topped carrots, New York uses the barrel, bushel basket, and a 100-pound sack measuring 23 by 40 inches; the latter is the most popular of the three packages.

CONCLUSION

The foregoing brings out clearly the great variations which exist in fruit and vegetable containers. Many of these differences will always exist, because different types of commodities require different types of containers and because manufacturers in different sections of the country can readily supply certain types of containers and can not supply other types. The last of these two reasons is the principal obstacle in the way of adopting a specific container throughout the United States for any given commodity. However, the vast interchange of fruits and vegetables that now takes place throughout the country is acquainting the various growing sections with the containers used in other sections, and out of this is likely to come the adoption in a more general way of those containers which prove best adapted to the shipping of a commodity and which are at the same time most easily obtained.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

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